

Pantheon Report

Generated at 2018-08-28 16:21:45 (UTC).

Data path: GCE London on *ens4 (local)* → GCE Iowa on *ens4 (remote)*.

Repeated the test of 4 congestion control schemes twice.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

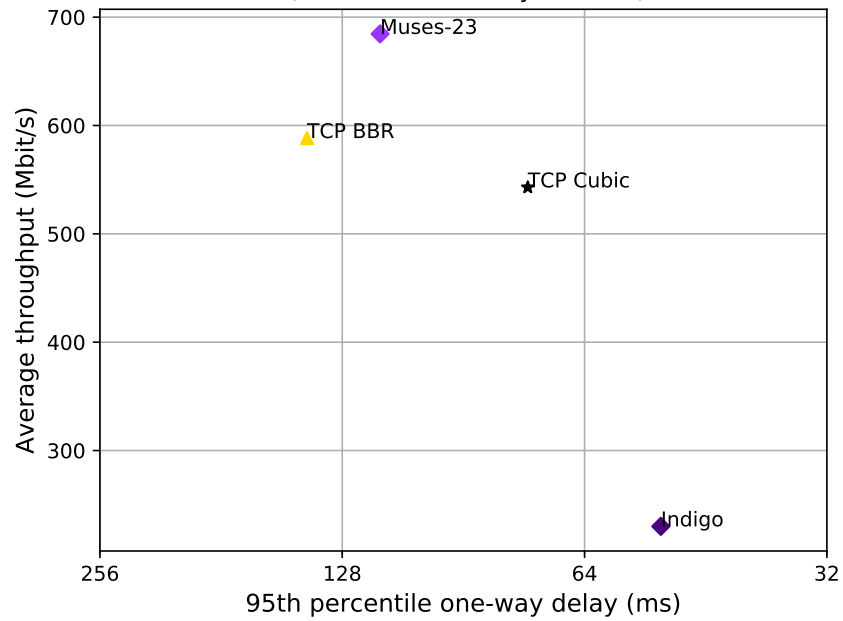
System info:

```
Linux 4.15.0-1017-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

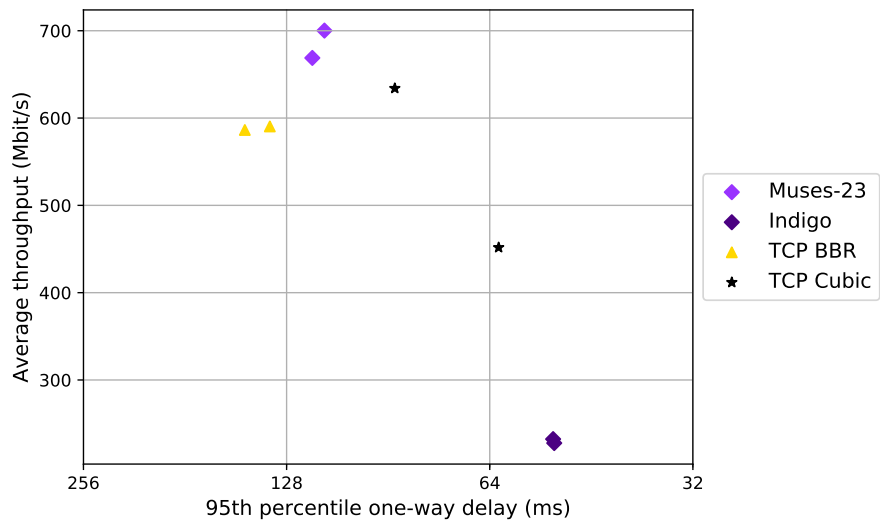
Git summary:

```
branch: muses-23 @ 88af05c5b0b7531637ca401951507a2fde628df6
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbf6e6db5ff5740dfe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from GCE London to GCE Iowa, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE London to GCE Iowa, 2 runs of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	588.39	141.57	1.06
TCP Cubic	2	542.87	75.29	0.12
Indigo	2	230.00	51.46	0.00
Muses-23	2	684.52	114.87	0.24

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 16:03:46

End at: 2018-08-28 16:04:16

Local clock offset: -0.793 ms

Remote clock offset: -0.08 ms

Below is generated by plot.py at 2018-08-28 16:20:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 586.37 Mbit/s

95th percentile per-packet one-way delay: 147.604 ms

Loss rate: 1.22%

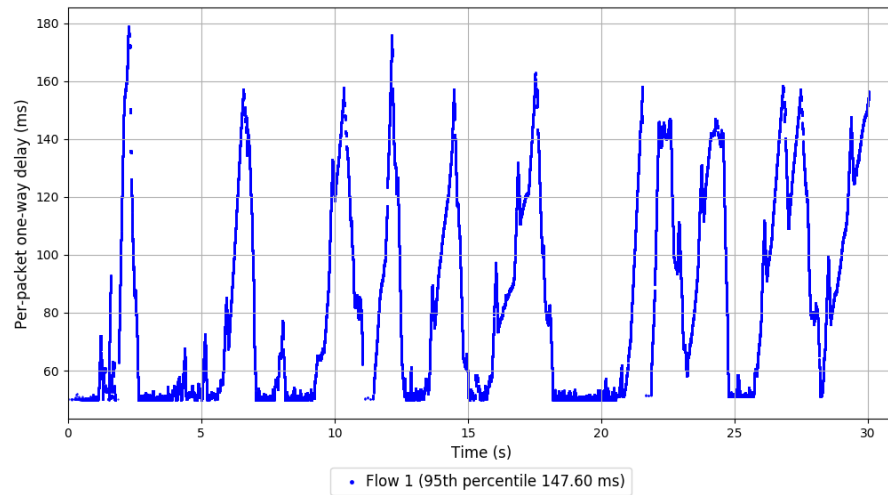
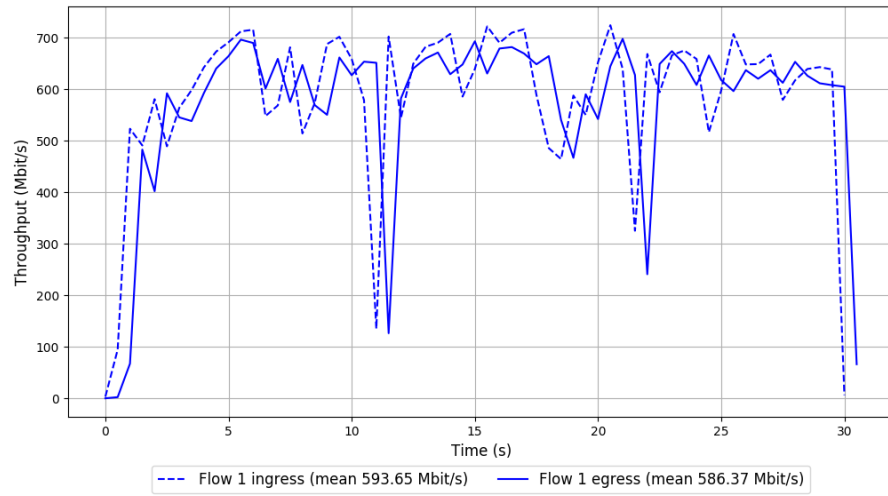
-- Flow 1:

Average throughput: 586.37 Mbit/s

95th percentile per-packet one-way delay: 147.604 ms

Loss rate: 1.22%

Run 1: Report of TCP BBR — Data Link

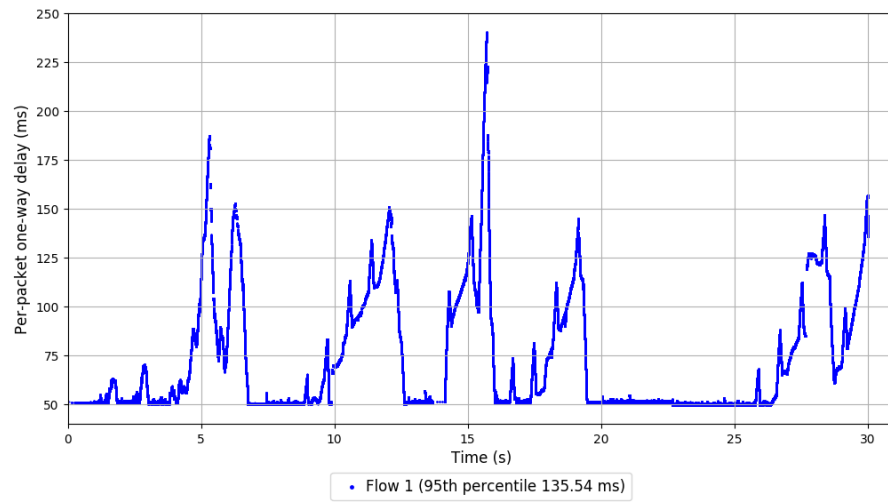
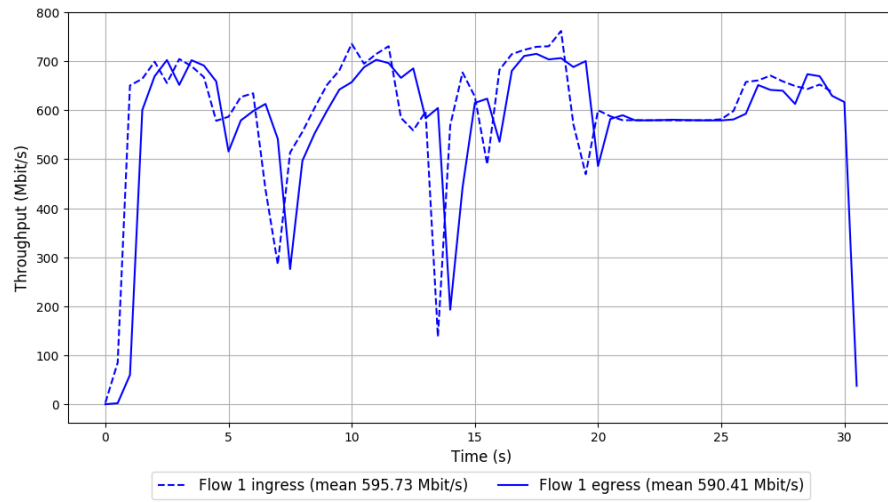


Run 2: Statistics of TCP BBR

Start at: 2018-08-28 16:09:53
End at: 2018-08-28 16:10:23
Local clock offset: -0.588 ms
Remote clock offset: -0.064 ms

Below is generated by plot.py at 2018-08-28 16:20:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 590.41 Mbit/s
95th percentile per-packet one-way delay: 135.536 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 590.41 Mbit/s
95th percentile per-packet one-way delay: 135.536 ms
Loss rate: 0.90%

Run 2: Report of TCP BBR — Data Link

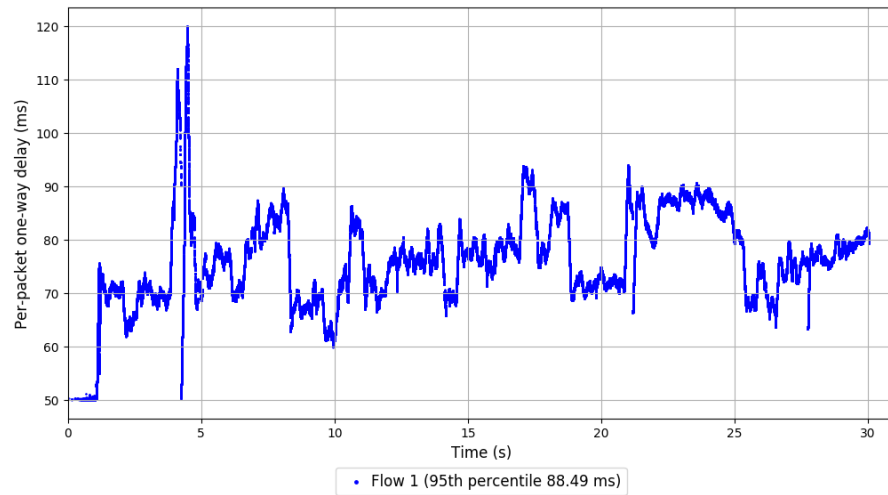
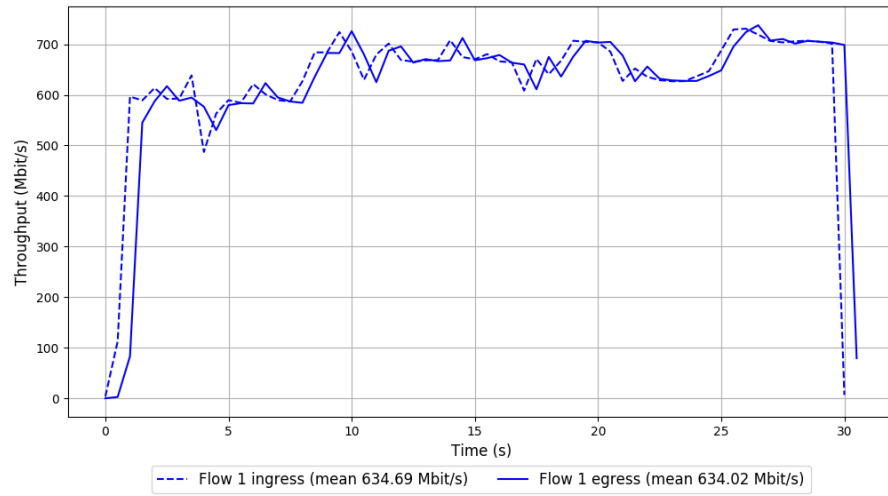


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 16:00:30
End at: 2018-08-28 16:01:00
Local clock offset: 0.261 ms
Remote clock offset: -0.059 ms

Below is generated by plot.py at 2018-08-28 16:20:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 634.02 Mbit/s
95th percentile per-packet one-way delay: 88.487 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 634.02 Mbit/s
95th percentile per-packet one-way delay: 88.487 ms
Loss rate: 0.11%

Run 1: Report of TCP Cubic — Data Link

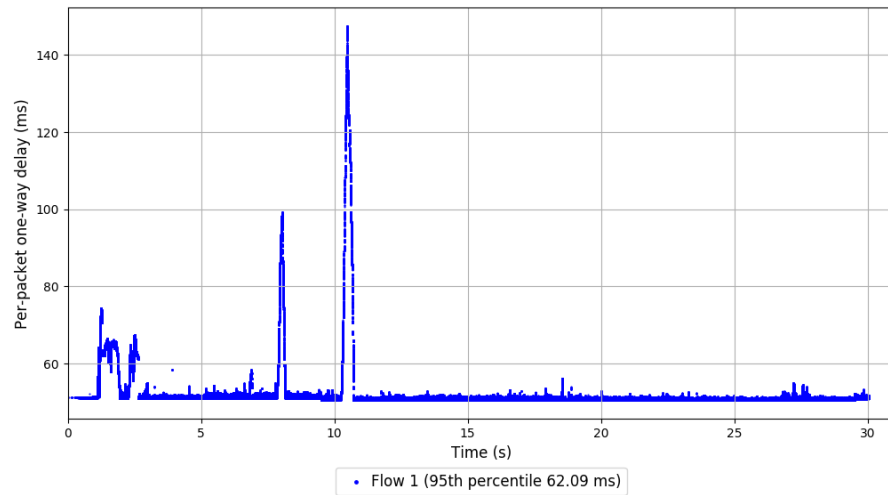
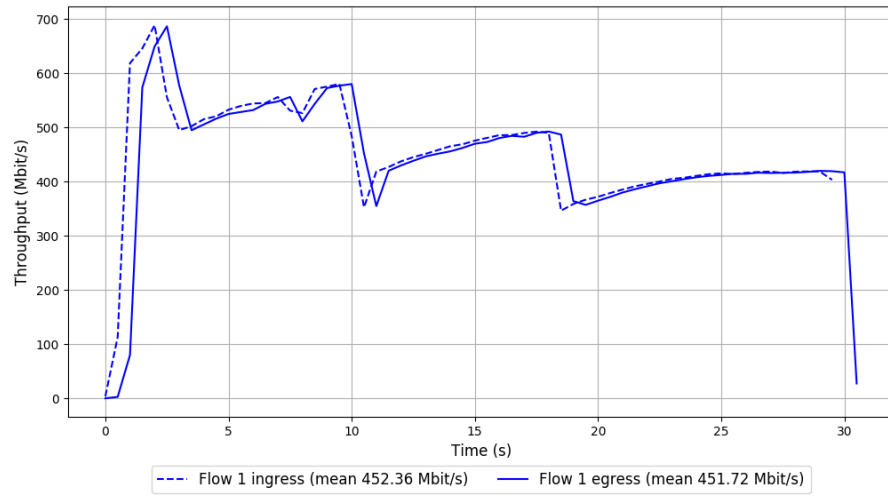


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 16:06:47
End at: 2018-08-28 16:07:17
Local clock offset: -0.371 ms
Remote clock offset: -0.071 ms

Below is generated by plot.py at 2018-08-28 16:20:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 451.72 Mbit/s
95th percentile per-packet one-way delay: 62.086 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 451.72 Mbit/s
95th percentile per-packet one-way delay: 62.086 ms
Loss rate: 0.14%

Run 2: Report of TCP Cubic — Data Link

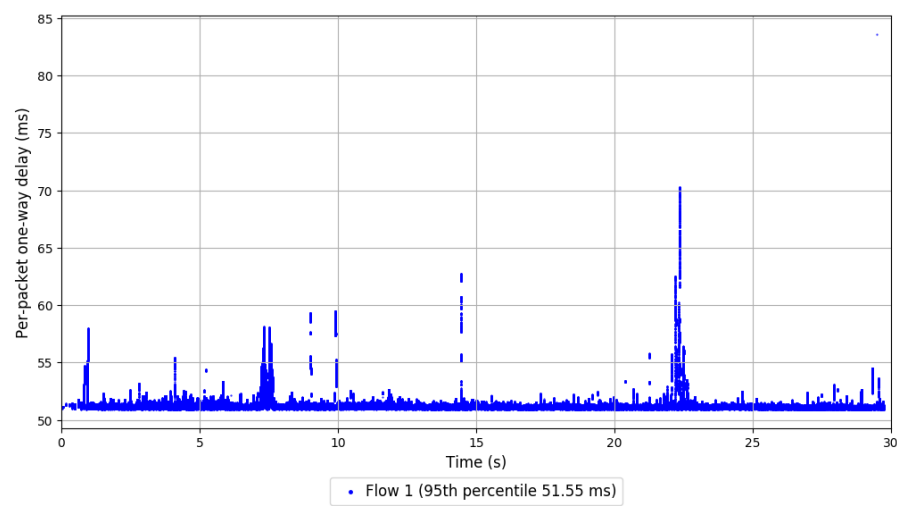
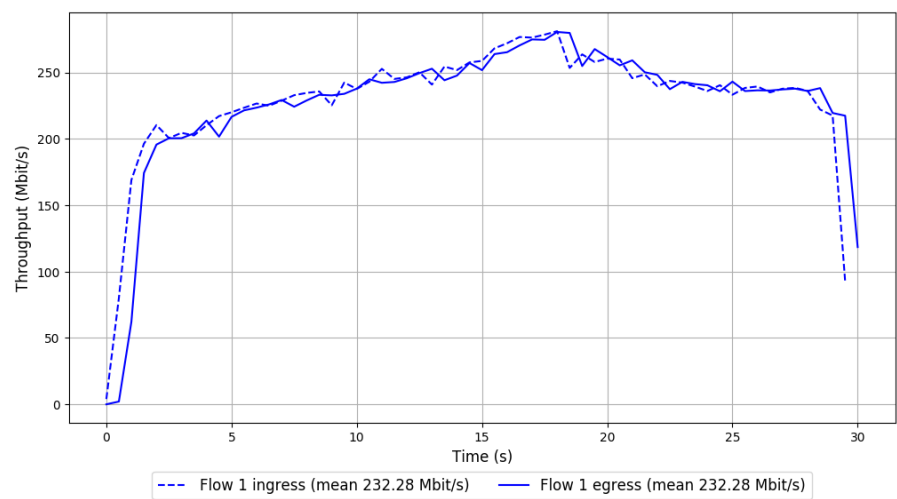


Run 1: Statistics of Indigo

Start at: 2018-08-28 15:59:05
End at: 2018-08-28 15:59:35
Local clock offset: -0.481 ms
Remote clock offset: -0.055 ms

Below is generated by plot.py at 2018-08-28 16:20:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 232.28 Mbit/s
95th percentile per-packet one-way delay: 51.555 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 232.28 Mbit/s
95th percentile per-packet one-way delay: 51.555 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 16:05:21

End at: 2018-08-28 16:05:51

Local clock offset: -0.658 ms

Remote clock offset: -0.08 ms

Below is generated by plot.py at 2018-08-28 16:20:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 227.73 Mbit/s

95th percentile per-packet one-way delay: 51.360 ms

Loss rate: 0.00%

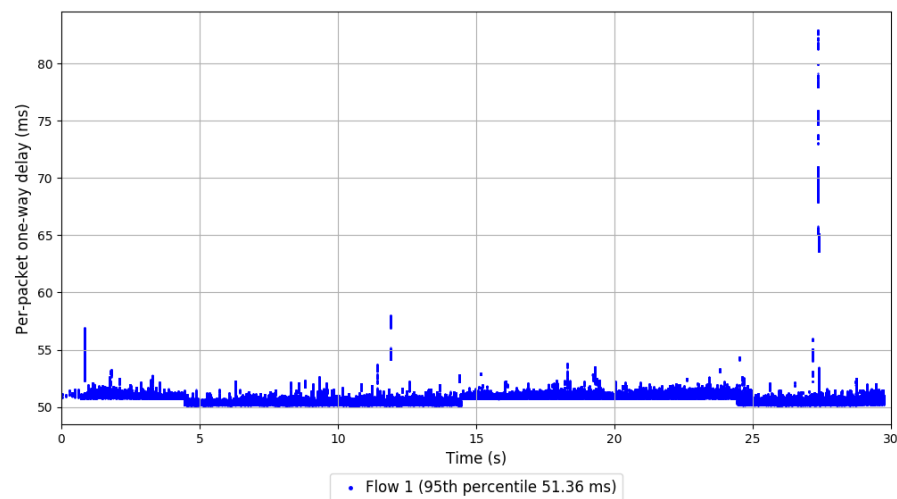
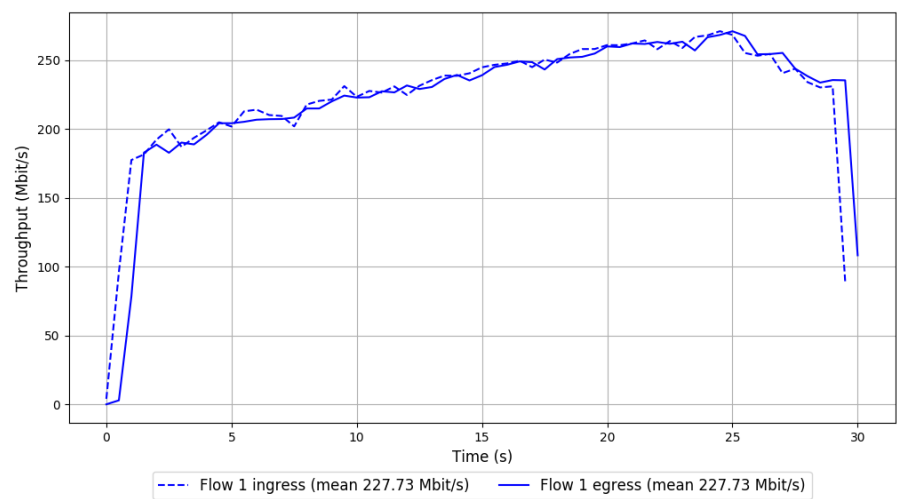
-- Flow 1:

Average throughput: 227.73 Mbit/s

95th percentile per-packet one-way delay: 51.360 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

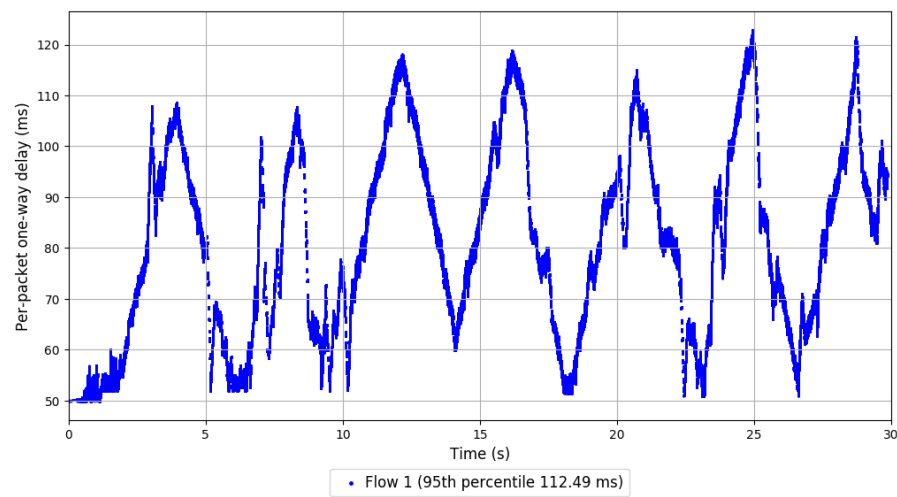
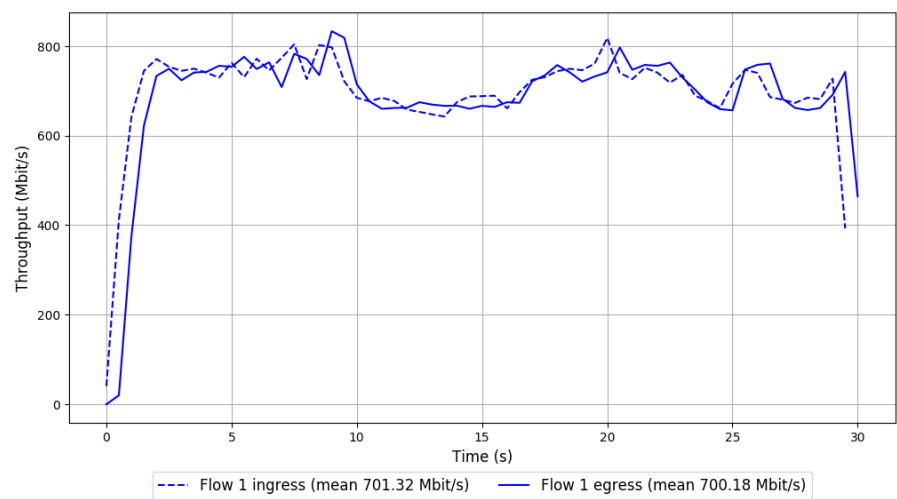


Run 1: Statistics of Muses-23

Start at: 2018-08-28 16:02:05
End at: 2018-08-28 16:02:35
Local clock offset: -1.102 ms
Remote clock offset: -0.086 ms

Below is generated by plot.py at 2018-08-28 16:21:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 700.18 Mbit/s
95th percentile per-packet one-way delay: 112.494 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 700.18 Mbit/s
95th percentile per-packet one-way delay: 112.494 ms
Loss rate: 0.15%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 16:08:14
End at: 2018-08-28 16:08:44
Local clock offset: -0.427 ms
Remote clock offset: -0.022 ms

Below is generated by plot.py at 2018-08-28 16:21:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 668.86 Mbit/s
95th percentile per-packet one-way delay: 117.242 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 668.86 Mbit/s
95th percentile per-packet one-way delay: 117.242 ms
Loss rate: 0.34%

Run 2: Report of Muses-23 — Data Link

